Appurtenances

WAC 296-826-500

Section Contents

YOUR RESPONSIBILITY:

To follow the requirements in this section when using appurtenances

Appurtenances

WAC 296-826-500

Rule

WAC 296-826-50005

Appurtenance requirements for all systems

Definition:

Appurtenance means all devices such as pumps, compressor, safety relief devices, liquid-level gauging devices, valves and pressure gauges.

You must

- Make sure each appurtenance installed before February 8, 1973, is determined to be safe by meeting one of the following:
  - Approved, tested, and installed by either:
    - The American National Standard for the Storage and Handling of Anhydrous Ammonia (in effect at the time of installation)
    - The Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia (in effect at the time of installation)
  - Accepted, certified, listed, or labeled, by a nationally recognized testing laboratory
  - Inspected or tested by a federal, state, municipal, or local authority responsible for enforcing occupational safety provisions, when no nationally recognized laboratory will provide approval
  - Tested and approved by a registered professional engineer or other qualified person if the system is a custom-designed or custom-built unit and no other recognized entity will provide approval
  - Keep a document on file signed by the qualified person that indicates the unit's safe. Include the test bases, test data and results and the qualifications of the qualified person.

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Appurtenance requirements for all systems (continued)

You must

- Make sure container appurtenances are both of the following:
  - Designed for at least the working pressure for the portion of the system where installed

    and
  - Fabricated from materials suitable for anhydrous ammonia service.
- Make sure fixed liquid level gauges, except on refrigerated storage:
  - Are designed so the maximum volume of the container filled by liquid doesn't exceed 85 percent of its water capacity

    and
  - Have a coupling into which it's threaded that's placed at the 85 percent level of the container
    - If located elsewhere, install the dip tube of this gauge so it can't be easily removed.
- Equip each container, except those filled by weight, with an approved liquid level gauging device that does all of the following:
  - Has a design pressure equal to or greater than the design pressure of the container
  - Are arranged so the maximum liquid fill level of containers can be readily determined.
- Follow additional requirements found in Table 5, Appurtenance Requirements for all Systems

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Appurtenance requirements for all systems (continued)

Table 5
Appurtenance Requirements for all Systems

If you have	Then make sure they
Safety relief devices	Don't have discharge termination in or beneath any building.
Safety relief valves	Have a flow capacity that isn't restricted by any connection to it on either the upstream or downstream side.
Connections to containers	Have shut off valves located as close to the container as possible. **Exemption:** Safety relief devices, gauging devices or devices fitted with a No. 54 drill size hole aren't required to have shut off valves located as close to the container as possible
Connections and the line, including valves and fittings	Have a greater rated flow than the excess flow valves that protects them
Excess flow valves, where required	Meet all of the following: • Are designed with a bypass no larger than a No. 60 drill size opening to allow equalization of pressures. • Close automatically at the rated flow of vapor or liquid specified by the manufacturer. • Maintain legible markings.
Excess flow valves provided with shut off valves Excess flow and back pressure check valves, where required	Are designed to close if the shut off valve breaks during installation Are located either: • Inside the container **or** • Outside the container as long as the excess flow valve is: – As close as possible to the entrance of the line **and** – Installed without excessive stress that could result in breakage between the container and the valve.
Liquid level gauging devices that: Require bleeding of the product into the atmosphere such as the rotary tube, fixed tube, and slip tube devices	Are either: • Designed so that the maximum opening of the bleed valve isn't larger than No. 54 drill size **or** • Provided with an excess flow valve. **Exemption:** ➢ If openings from the containers or through fittings are attached directly onto the container where pressure gauge connections are made, then there's no need for excess flow valves as long as the openings aren't larger than a No. 54 drill size ➢ This requirement doesn't apply to farm vehicles used for the application of ammonia as covered by WAC 296-826-50030.

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WAC 296-826-50005
Appurtenance requirements for all systems (continued)

You must

- Follow Table 6, Safety Valve Start to Discharge Rate, and Table 7, Safety Relief Valve Rate of Discharge, for the following systems:
  - Nonrefrigerated stationary containers
  - Mounted on trucks, semi-trailers, and trailers used for the transportation of ammonia
  - Mounted on farm wagons for the transportation of ammonia
  - Mounted on farm equipment for the application of ammonia

Exemption:

The rate of discharge of spring-loaded safety relief valves installed on underground containers may be reduced to 30 percent of the rate of discharge specified in Table 6, Safety Relief Valve Rate of Discharge so long as the container isn't uncovered after installation until the liquid ammonia has been removed.

Table 6
Safety Valve Start to Discharge Rate

Containers	Minimum	Maximum*
ASME U-68, U-69	110%	125%
ASME U-200, U-201	95%	100%
ASME 1952, 1956, 1959, 1962, 1965, 1968, or 1971	95%	100%
API-ASME	95%	100%
U.S. Coast Guard	(As required by U.S.C.G. regulations)	
DOT	(As required by DOT regulations)	

Note:

A relief valve manufacturer's tolerance of plus 10 percent is permitted.

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Appurtenance requirements for all systems (continued)

Table 7

Safety Relief Valve Rate of Discharge

Instructions are found below the table

Surface Area sq. ft.	Flow Rate CFM Air	Surface Area sq. ft.	Flow Rate CFM Air	Surface Area sq. ft.	Flow Rate CFM Air	Surface Area sq. ft.	Flow Rate CFM Air
20	258	145	1,310	340	2,640	1,350	8,160
25	310	150	1,350	350	2,700	1,400	8,410
30	360	155	1,390	360	2,760	1,450	8,650
35	408	160	1,420	370	2,830	1,500	8,900
40	455	165	1,460	380	2,890	1,550	9,140
45	501	170	1,500	390	2,950	1,600	9,380
50	547	175	1,530	400	3,010	1,650	9,620
55	310	180	1,570	450	3,320	1,700	9,860
60	360	185	1,600	500	3,620	1,750	10,090
65	408	190	1,640	550	3,910	1,800	10,330
70	455	195	1,670	600	4,200	1,850	10,560
75	762	200	1,710	650	4,480	1,900	10,800
80	804	210	1,780	700	4,760	1,950	11,030
85	845	220	1,850	750	5,040	2,000	11,260
90	885	230	1,920	800	5,300	2,050	11,490
95	925	240	1,980	850	5,590	2,100	11,720
100	965	250	2,050	900	5,850	2,150	11,950
105	1,010	260	2,120	950	6,120	2,200	12,180
110	1,050	270	2,180	1,000	6,380	2,250	12,400
115	1,090	280	2,250	1,050	6,640	2,300	12,630
120	1,120	290	2,320	1,100	6,900	2,350	12,850
125	1,160	300	2,380	1,150	7,160	2,400	13,080
130	1,200	310	2,450	1,200	7,410	2,450	13,300
135	1,240	320	2,510	1,250	7,660	2,500	13,520
140	1,280	330	2,570	1,300	7,910		

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Appurtenance requirements for all systems (continued)

- Table instructions:
  - The surface area = the total outside surface area of the container in square feet.
  - When the surface area isn't stamped on the name plate or the marking isn't legible, calculate the area by using the Table 8, Surface Area

Table 8
Surface Area

If you have	Then calculate as follows
Cylindrical container with hemispherical heads	Area = overall length in feet times the outside diameter in feet times 3.1416
Cylindrical container with other than hemispherical heads	Area = (overall length in feet plus 0.3 outside diameter in feet) times outside diameter in feet times 3.1416
Spherical container	Area = outside diameter in feet squared times 3.1416

- Flow rate -- CFM air = cubic feet per minute of air required at standard conditions, 60°F and atmospheric pressure (14.7 psia).
  - The rate of discharge may be altered for intermediate values of surface area.
  - For containers with total outside surface area greater than 2,500 sq. ft., the required flow rate can be calculated using the formula, flow rate CFM air = 22.11 A0.82 where A =outside surface area of the container in square feet.

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WAC 296-826-50010

Nonrefrigerated stationary containers

IMPORTANT:

In addition to this section, you need to follow the Appurtenances requirements for all systems, WAC 296-826-50005.

You must

- Make sure all containers are equipped with all of the following:
  - An approved vapor return valve
  - A fixed maximum liquid level gauge
  - A pressure gauge that's both:
    - Graduated from zero to 400 psig

      and
    - Designed for use in ammonia service
- Provide one or more spring-loaded safety relief valves, or an equivalent type, on all containers.
- Make sure safety relief valves do all of the following:
  - Discharge in the following ways:
    - Away from the container in an upward, unobstructed manner into the atmosphere
    - Not in or beneath a building
  - Have raincaps that allow free discharge of the vapor and prevent the entrance of water
  - Have a method for draining accumulated condensation
  - Have a start to discharge, related to the design pressure of the container, according to Table 6, Safety Valve Start to Discharge Rate

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WAC 296-826-50010
Nonrefrigerated stationary containers (continued)

- Are arranged to minimize the possibility of tampering
- Are provided, when the pressure setting adjustment is external, with a means of sealing the adjustment
- Have direct communication with the vapor space of the container

Note:

- Vent pipes from 2 or more safety relief devices located on the same unit, or similar lines from 2 or more different units, may be run into a common header if:
  - The cross-sectional area of the header is at least equal to the sum of the cross sectional areas of the individual vent pipes.

You must

- Protect container appurtenances against physical damage and during transit of containers intended for underground installation.
- Make sure shut off valves aren't installed between the safety relief valve and the container or system. A shut off valve may be used if arranged so that the required capacity flow is maintained.

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Appurtenances

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Nonrefrigerated stationary containers (continued)

Exemption:

- You're exempt from the requirement not to install the shut off valve between the safety relief valve and the container or systems in the following situations:
  - A 3-way valve installed under 2 safety relief valves, each with:
    - The required rate of discharge
    - **and**
    - Installed to allow either of the safety relief valves to be closed off but not at the same time.
  - Two separate relief valves are installed with individual shut off valves.
  - The 2 shut off valve stems must be mechanically interconnected to allow the full required flow of one safety relief valve at all times.
  - When a safety relief valve manifold that allows:
    - One valve of 2 or more to be closed off
    - **and**
    - The remaining valve or valves will provide not less than the rate of discharge shown on the manifold nameplate.

You must

- Make sure vapor and liquid connections have either of the following:
  - An approved excess flow valve

    or
  - An approved quick-closing internal valve that remains closed except during operation.

Exemption:

- The following don't need to be fitted with excess flow valves:
  - Safety relief valves
  - Liquid level gauging devices that require both of the following:
    - Bleeding of the product into the atmosphere
    - Construction so that outward flow won't exceed that passed by a No. 54 drill size opening
  - Those with openings from the containers or through fittings that are attached directly onto the container where pressure gauge connections are made as long as:
    - The openings aren't larger than a No. 54 drill size.

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WAC 296-826-50010
Nonrefrigerated stationary containers (continued)

You must

- Follow additional requirements found in Table 9, Appurtenances for Nonrefrigerated Stationary Containers.

Table 9
Appurtenances for Nonrefrigerated Stationary Containers

If you have	Then make sure they
Columnar-type gauges	• Are restricted to stationary storage installations • Are shielded against the direct rays of the sun • Are equipped with all of the following: – Shut off valves having metallic hand-wheels – Excess flow valves – Extra heavy glass that's adequately protected with a metal housing applied by the gauge manufacturer
Main shut off valves	• Are kept closed and locked when the installation is unattended **Exemption:** Valve locks aren't required if the facility is protected against tampering by fencing or other suitable means.
Filling connections	• Are provided with one of the following: – Combination back-pressure check valve and excess flow valve – One double or 2 single back-pressure check valves – A positive shut off valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve
Underground installations with a probability of the manhole or housing becoming flooded	• Have vent lines located above the high water level • Have manholes or housings with ventilated louvers or their equivalent with the area of their openings equal or exceeding: – The combined discharge areas of the safety relief valves and vent lines which discharge their content into the manhole housing
Hydrostatic relief valves	Are installed between each pair of valves in the liquid ammonia piping or hose.

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WAC 296-826-50015

Refrigerated tanks

IMPORTANT:

In addition to this section, you need to follow the Appurtenances requirements for all systems, WAC 296-826-50005.

You must

- Protect container appurtenances against the following:
  - Physical damage during transit of containers intended for underground installation
  - Damage from vehicles.
- Make sure safety relief devices have a total relieving capacity larger than either of the following:
  - A possible refrigeration system upset such as a cooling water failure, power failure, instrument air or instrument failure, mechanical failure of any equipment, excessive pumping rates or changing atmospheric pressure

  ~ **or**

  - The amount based on using either one of the following fire exposure formulas (see note below for codes):
    - Valve manufacturers who use weight of vapors to be relieved as the classifying basis, use this formula:

$$W = \frac{34{,}500\ F\ A\ (0.82)}{L}$$

or

Valve manufacturers that classify valves based on air flows, use this formula:

$$Q_{(a)} = \frac{633{,}000\ F\ A\ (O.32)}{LC}$$

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WAC 296-826-50015
Refrigerated tanks (continued)

You must

- Make sure safety relief devices meet the following additional requirements:
  - Are set to start-to-discharge at a pressure not in excess of the design pressure of the tank
  - Have a total relieving capacity sufficient to prevent a maximum pressure in a tank of more than 120 percent of the design pressure.
- Provide shut off valves for all connections including plugs, safety valves, and thermometer wells:
  - Locate them as close to the tank as is practical.

Exemption:

Shut off valves don't need to be provided on connections with a No. 54 drill size restriction

Note:

- Install, when operating conditions make it advisable, both of the following:
  - A check valve on the fill connection
  - A remotely operated shut off valve on other connections located below the maximum liquid level.

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Appurtenances

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WAC 296-826-50015

Refrigerated tanks (continued)

You must

- Follow requirements found in Table 10, Refrigerated Tank Appurtenances

Table 10
Refrigerated Tank Appurtenances

If you have	Then make sure they
Shut off valves used as a means of lock out for inspection or repair	• Are of adequate flow capacity • Are arranged to be locked or sealed open and not closed except by an authorized person who does both of the following: – Remains there while the valve is closed – Locks or seals the valve open when leaving the station.
Discharge line and header	• Are designed to accommodate the maximum flow. • Have a back pressure not greater than 10 percent of the design pressure of the storage container • Include the back pressure in the 120 percent of the maximum pressure of the design pressure. • Don't have other containers or systems that exhaust into the discharge line or header. • Have vent lines installed to prevent the accumulation of liquid in the lines **Note:** Multiple safety relief valves on the same storage unit may be run through a common discharge header.
Vacuum breakers	Are provided with atmospheric storage
Stacks	• Do both of the following: – Prevent any obstructions by rain, snow, ice, or condensation **and** – Have an outlet size not smaller than the size of the safety relief valve outlet connection

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WAC 296-826-50015
Refrigerated tanks (continued)

You must

- Make sure appurtenances meet all of the requirements found in the following:
  - ANSI CGA C-7 2004
  - ANSI CGA G2.1 1999
  - API Standard 620 4th Edition, 2002
  - ASHRAE 15 2004
  - ASME 2001, Section VIII, Division 1
  - ANSI B95.1 1977

WAC 296-826-50020
Systems mounted on trucks, semi-trailers and trailers

IMPORTANT:

In addition to this section, you need to follow the Appurtenances requirements for all systems, WAC 296-826-50005.

You must

- Make sure each container has all of the following:
  - Fixed maximum liquid level gauging devices
  - Pressure-indicator gauges with a dial graduated from zero to 400 psig
  - Either of the following:
    - Equipped for spray-loading, which fills in vapor space

      or
    - Has an approved vapor return valve of adequate capacity.

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Appurtenances

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WAC 296-826-50020

Systems mounted on trucks, semi-trailers and trailers (continued)

You must

- Provide one or more spring-loaded safety relief valves, or an equivalent type, on all containers, that do all of the following:
  - Discharges in the following ways:
    - Away from the container in an upward, unobstructed manner into the atmosphere
    - Not in or beneath a building.
  - Has raincaps that allow free discharge of the vapor and prevent the entrance of water
  - Has a method for draining accumulated condensation
  - Has a start to discharge, related to the design pressure of the container, according to Table 6, Safety Valve Start to Discharge Rate
  - Are arranged to minimize the possibility of tampering
  - Provided, when the pressure setting adjustment is external, with a means of sealing the adjustment
  - Has direct communication with the vapor space of the container
- Make sure shut off valves aren't installed between the safety relief valve and the container or system. A shut off valve may be used if arranged so that the required capacity flow is maintained.

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WAC 296-826-50020
Systems mounted on trucks, semi-trailers and trailers (continued)

Exemption:

- You're exempt from the requirement not to install the shut off valve between the safety relief valve and the container or systems in the following situations:
  - A 3-way valve installed under 2 safety relief valves, each with:
    - The required rate of discharge

      and
    - Installed to allow either of the safety relief valves to be closed off but not at the same time.
  - Two separate relief valves are installed with individual shut off valves.
  - The 2 shut off valve stems must be mechanically interconnected to allow the full required flow of one safety relief valve at all times.
  - When a safety relief valve manifold that allows:
    - One valve of 2 or more to be closed off

      and
    - The remaining valve or valves will provide not less than the rate of discharge shown on the manifold nameplate.

You must

- Follow additional requirements found in Table 11, Appurtenances for Systems Mounted on Trucks, Semi-Trailers and Trailers

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WAC 296-826-50020
Systems mounted on trucks semi-trailers and trailers (continued)

Table 11
Appurtenances for Systems Mounted on Trucks, Semi-Trailers and Trailers

If you have:	Then make sure they:
All container connections	• Are provided with either of the following: – Automatic excess flow valves **or** – Quick-closing internal valves that remain closed except during delivery operations **Note:** If the control mechanism is provided with a secondary control remote from the delivery connection, then a fusible section (melting point 208°F to 220°F) is required to permit the internal valve to close automatically in case of fire. **Exemption:** Filling connections, safety relief devices, and liquid level and pressure gauge connections are exempt from automatic excess flow valves and quick-closing internal valves.
Filling connections	• Prevent back-flow in the event the filling connection breaks with at least one of the following: – Automatic back pressure check valves – Excess flow check valves – Quick closing internal valves **Exemption:** An automatic valve isn't required if: – The filling and discharge connect to a common opening in the container shell **and** – The opening is fitted with a quick-closing internal valve
Nonrecessed container fittings and appurtenances	• Are protected against physical damage by one of the following methods: – A protected location – The vehicle frame or bumper – A protective housing that meets the following: • Is fabricated from material that's compatible with the containers design and construction requirements • Designed to withstand static loadings in any direction equal to twice the weight of the container and attachments when filled using a safety factor of not less than 4, based on the ultimate strength of the material used **Note:** Protect nonrecessed container fittings and appurtenances with a weather cover as needed for proper operation of valves and safety relief devices
Columnar-type gauges	• Are restricted to stationary storage installations • Are shielded against the direct rays of the sun • Are equipped with all of the following: – Shut off valves having metallic hand-wheels – Excess flow valves – Extra heavy glass that's adequately protected with a metal housing applied by the gauge manufacturer
Hydrostatic relief valves	Are installed between each pair of valves in the liquid ammonia piping or hose.

WAC 296-826-50025

Systems mounted on farm trucks or trailers for transportation of ammonia

IMPORTANT:

- This section applies to containers of 3,000 gallons capacity or less and pertinent equipment mounted on farm trucks or trailers used for the transportation of ammonia.
- In addition to this section, you need to follow the Appurtenances requirements for all systems, WAC 296-826-50005.

You must

- Make sure all containers are equipped with a fixed maximum liquid level gauge.
- Make sure vapor and liquid connections have either of the following:
  - An approved excess flow valve

    or
  - An approved quick-closing internal valve that remains closed except during operation.

Exemption:

- The following don't need to be fitted with excess flow valves:
  - Safety relief valves
  - Those with openings from the containers or through fittings that are attached directly onto the container where pressure gauge connections are made as long as the openings aren't larger than a No. 54 drill size.

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Appurtenances

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Systems mounted on farm trucks or trailers for transportation of ammonia (continued)

You must

- Provide one or more spring-loaded safety relief valves, or an equivalent type, on all containers, that do all of the following:
  - Discharges in the following ways:
    - Away from the container in an upward, unobstructed manner into the atmosphere
  - Has raincaps that allow free discharge of the vapor and prevent the entrance of water
  - Has a method for draining accumulated condensation
  - Has a start to discharge, related to the design pressure of the container, according to Table 6, Safety Valve Start to Discharge Rate
  - Are arranged to minimize the possibility of tampering
  - Provided, when the pressure setting adjustment is external, with a means of sealing the adjustment
  - Has direct communication with the vapor space of the container
- Make sure shut off valves aren't installed between the safety relief valve and the container or system. A shut off valve may be used if arranged so that the required capacity flow is maintained.

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WAC 296-826-50025

Systems mounted on farm trucks or trailers for transportation of ammonia (continued)

Exemption:

- You're exempt from the requirement not to install the shut off valve between the safety relief valve and the container or systems in the following situations:
  - A 3-way valve installed under 2 safety relief valves, each with:
    - The required rate of discharge

      and
    - Installed to allow either of the safety relief valves to be closed off but not at the same time.
  - Two separate relief valves are installed with individual shut off valves.
    - The 2 shut off valve stems must be mechanically interconnected to allow the full required flow of one safety relief valve at all times.
  - When a safety relief valve manifold that allows:
    - One valve of 2 or more to be closed off

      and
    - The remaining valve or valves will provide not less than the rate of discharge shown on the manifold nameplate.

You must

- Secure both ends of the hose while in transit
- Make sure all containers with a capacity exceeding 250 gallons are equipped with both of the following:
  - A pressure gauge with a dial graduated from 0-400 psig

    and
  - A method for spray loading or with an approved vapor return valve

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Systems mounted on farm trucks or trailers for transportation of ammonia (continued)

You must

- Follow additional requirements found in Table 12, Appurtenances for Systems Mounted on Farm Trucks or Trailers.

Table 12
Appurtenances for Systems Mounted on Farm Trucks or Trailers

If you have	Then make sure they
Filling connections	• Are fitted with one of the following: – A combination back-pressure check valve and excess flow valve – One double or 2 single back-pressure check valves – A positive shut off valve used with either an: • Internal back-pressure check valve **or** • Internal excess flow valve
A fully enclosed guard	• Have properly vented safety relief valves.
Fittings	• Are protected from physical damage by a rigid guard designed: – To withstand static loading in any direction equal to twice the weight of the container and lading – With a safety factor of 4 based on the maximum strength of the material used
Liquid withdrawal lines installed in the bottom of the container	Have connections, including the hose, that aren't lower than the lowest horizontal edge of the truck axle
Columnar-type gauges	• Are shielded against the direct rays of the sun • Are equipped with all of the following: – Shut off valves having metallic hand-wheels – Excess flow valves – Extra heavy glass that's adequately protected with a metal housing applied by the gauge manufacturer
Hydrostatic relief valves	Are installed between each pair of valves in the liquid ammonia piping or hose.

WAC 296-826-50030

Systems mounted on farm equipment for ammonia application

IMPORTANT:

- This section applies to systems mounted on farm equipment and used for the filed application of ammonia.
- In addition to this section, you need to follow the Appurtenances requirements for all systems, WAC 296-826-50005.

You must

- Make sure each container has a fixed maximum liquid-level gauge.
- Provide one or more spring-loaded safety relief valves, or an equivalent type, on all containers, that do all of the following:
  - Discharges in the following ways:
    - Away from the container in an upward, unobstructed manner into the atmosphere
    - Not in or beneath a building.
  - Has raincaps that allow free discharge of the vapor and prevent the entrance of water
  - Has a method for draining accumulated condensation
  - Has a start to discharge, related to the design pressure of the container, according to Table 6, Safety Valve Start to Discharge Rate
  - Are arranged to minimize the possibility of tampering
  - Provided, when the pressure setting adjustment is external, with a means of sealing the adjustment
  - Has direct communication with the vapor space of the container

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Systems mounted on farm equipment for ammonia application (continued)

You must

- Make sure shut off valves aren't installed between the safety relief valve and the container or system. A shut off valve may be used if arranged so that the required capacity flow is maintained.

Exemption:

- You're exempt from the requirement not to install the shut off valve between the safety relief valve and the container or systems in the following situations:
  - A 3-way valve installed under 2 safety relief valves, each with:
    - The required rate of discharge

      and

    - Installed to allow either of the safety relief valves to be closed off but not at the same time.
  - Two separate relief valves are installed with individual shut off valves.
  - The 2 shut off valve stems must be mechanically interconnected to allow the full required flow of one safety relief valve at all times.
  - When a safety relief valve manifold that allows:
    - One valve of 2 or more to be closed off

      and

    - The remaining valve or valves will provide not less than the rate of discharge shown on the manifold nameplate.

- Follow additional requirements found in Table 13, Appurtenances for Systems Mounted on Farm Equipment for Ammonia Application

-Continued-

WAC 296-826-50030

Systems mounted on farm equipment for ammonia application (continued)

Table 13
Appurtenances for Systems Mounted on Farm Equipment for Ammonia Application

If you have	Then make sure they
Filling connections	• Are fitted with one of the following: – A combination back-pressure check valve and excess flow valve – One double or 2 single back-pressure check valves – A positive shut off valve used with either an: • Internal back-pressure check valve **or** • Internal excess flow valve **Exemption:** An excess-flow valve isn't required in either of the following: – Vapor connection providing you meet both of the following: • The controlling orifice isn't in excess of 7/16 of an inch in diameter **and** • The valve is hand-operated (attached hand-wheel or equivalent) shut off valve **or** – In the liquid withdrawal line if the controlling opening between the contents of the container and the outlet of the shut off valve don't exceed 7/16 inch in diameter. **Note:** To assist in filling applicator tanks, you're allowed to bleed vapors into the open air if you meet the above requirements.
Columnar-type gauges	• Are shielded against the direct rays of the sun • Are equipped with all of the following: – Shut off valves having metallic hand-wheels – Excess flow valves – Extra heavy glass that's adequately protected with a metal housing applied by the gauge manufacturer
• An applicator tank that's both of the following: – Trailed **and** – The metering device is remotely mounted (for example on a tractor tool bar)	Use an automatic break-away type, self-closing, coupling **Note:** ➢ Metering devices may be connected directly to the tank withdrawal valve. ➢ A union type connection is acceptable between the tank valve and metering device
Hydrostatic relief valves	Are installed between each pair of valves in the liquid ammonia piping or hose.

Appurtenances

WAC 296-826-500

Rule

WAC 296-826-50035

Portable DOT containers

IMPORTANT:

- This section applies to systems that use cylinders, portable tanks (DOT-51), or ton containers (DOT-106A, DOT-110A).
- In addition to this section, you need to follow the Appurtenances requirements for all systems, WAC 296-826-50005.

You must

- Make sure safety relief devices meet DOT specifications.
- Provide the following protection:
  - To valves and pressure regulating equipment from tampering once installed for use
  - To containers:
    - From heat sources such as radiant flame and steam pipes. Don't apply heat directly to containers to raise the pressure
    - From moving vehicles or external damage while being stored
    - From ignitable debris and to prevent external corrosion while being stored. Storage can be indoors or outdoors.
- Protect container valves while in transit, in storage, and while being moved into final use by doing either of the following:
  - Setting them into the recess of the container
  - **or**
  - By fastening a ventilated cap or collar to the container that can withstand a blow from any direction equivalent to a 30-pound weight being dropped 4 feet
    - Construction should be such that a blow won't be transmitted to the valves or other connections.
- Keep outlet valves tightly closed when containers aren't connected for service on all empty or loaded containers
  - Secure the valve protection cap, if the container is designed for one, when the container isn't in service.